

Electronic Supplementary Information

Light-trapping enhanced ZnO-MoS₂ core-shell nanopillar arrays for broadband ultraviolet-visible-near infrared photodetection

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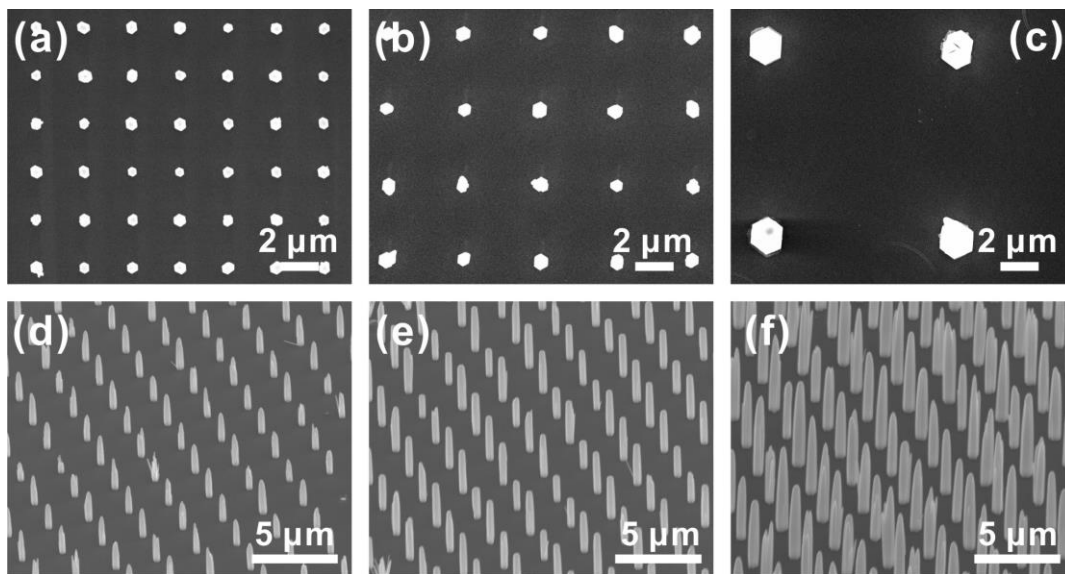


Figure S1. (a-c) Top-view SEM images of ZnO NP arrays with different spacings of 2.5, 4, and 10 μm , respectively. (d-f) Tilted-view SEM images of ZnO NP arrays with different heights of 1.5, 3, and 4.5 μm , respectively.

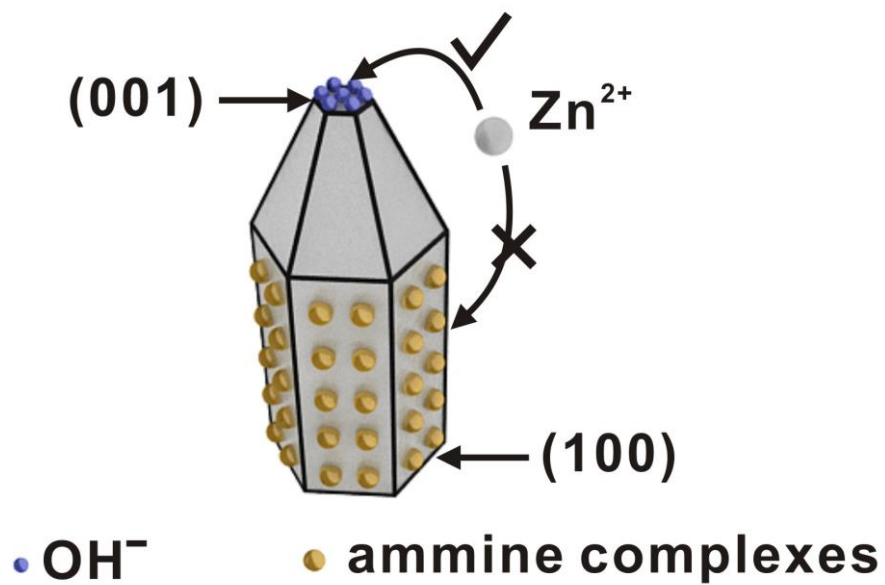


Figure S2. The growth process of ZnO NP.

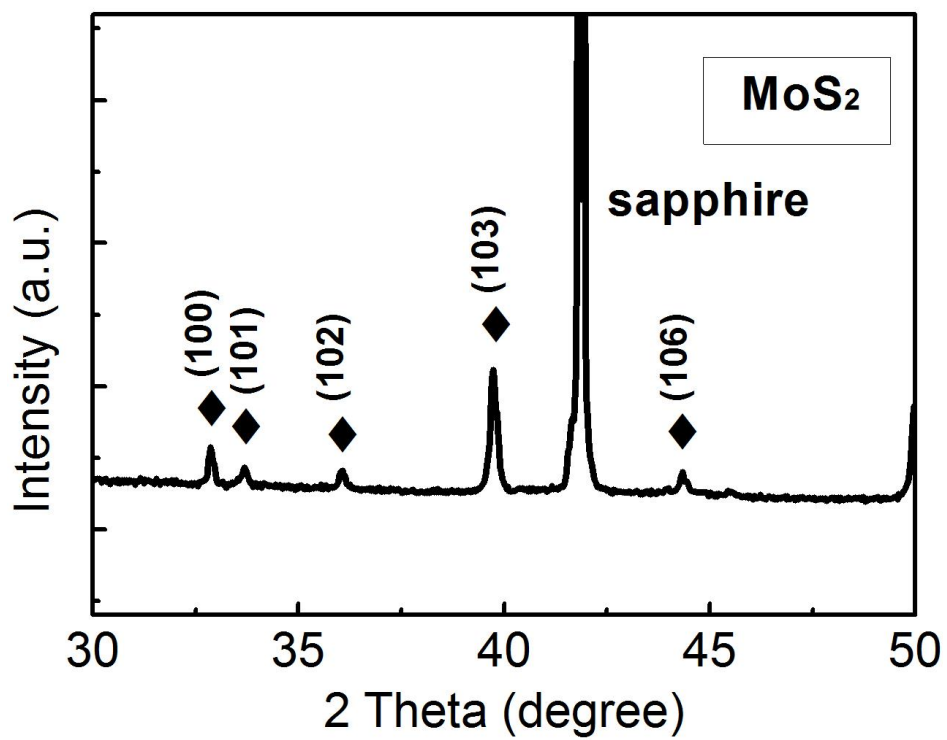


Figure S3. XRD pattern of the MoS₂ film directly deposited on the sapphire substrate.

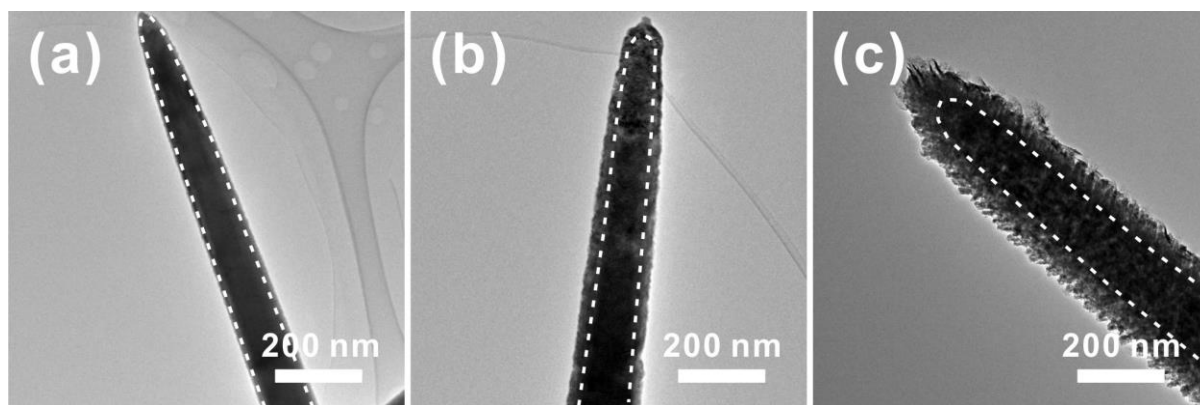


Figure S4. TEM images of ZnO-MoS₂ core-shell NPs with different MoS₂ layer thicknesses of 6, 22, and 75 nm, respectively.

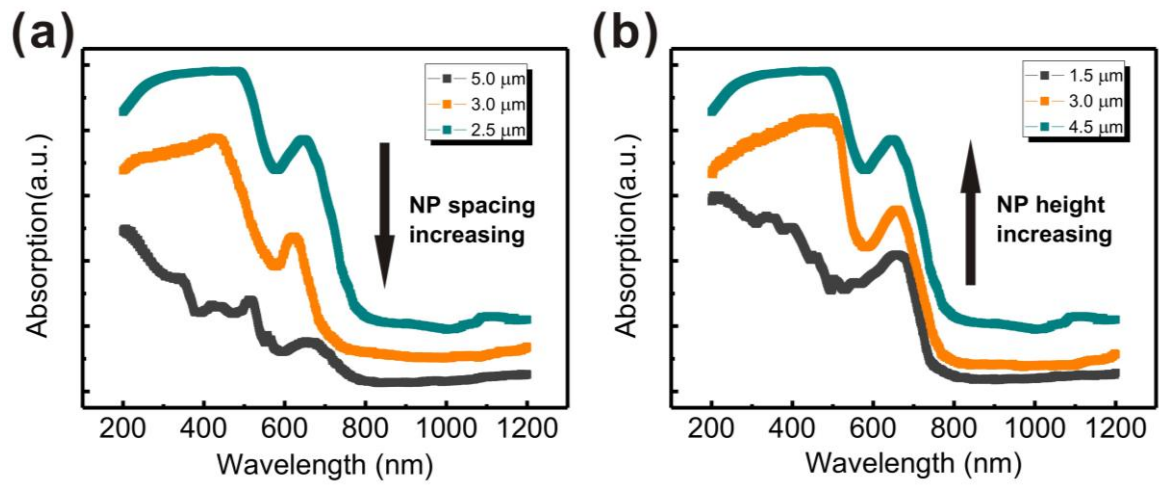


Figure S5. Simulated absorption spectra of ZnO-MoS₂ core-shell NP arrays with different (a) spacings and (b) heights.

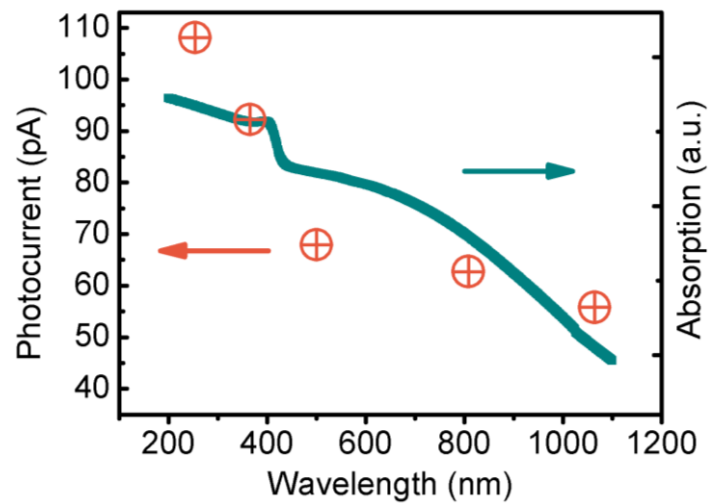


Figure S6. Photocurrent spectrum and optical absorption spectrum of the ZnO-MoS₂ core-shell NP array.

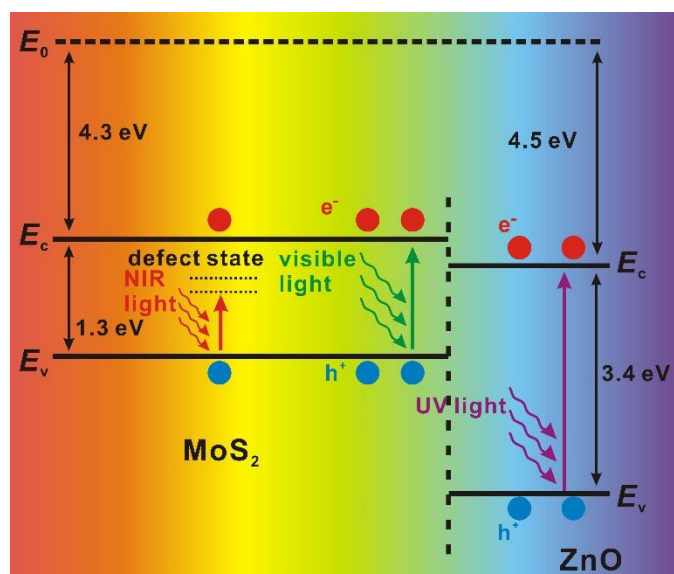


Figure S7. Energy band diagram of the ZnO-MoS₂ core-shell NP.